






## Motivating teaching styles and directiveness in Physical Education

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### Abstract

The PE teacher's intervention can be more effective if they use certain motivational styles, helping to create a positive learning environment and to promote active lifestyle habits. However, if it is perceived as a negative experience, it could demotivate the learner and provoke rejection of the practice, thus jeopardising the motor literacy process. Following a cross-sectional-correlational design, the main objective of this study was to analyse the relationships between teachers' motivational styles and directiveness in Physical Education. 500 secondary school students participated. The SIS scale was used to determine interpersonal teaching style and the PCT scale was used to assess directiveness. The results indicated that the scale dimensions correlate positively and significantly with each other, except for Chaos, which correlates negatively with Autonomy Support and Structure. The Control dimension did not show any correlation with the rest of the dimensions assessed. In addition, the cluster analysis showed two profiles of teacher motivational style perceptions: a more directive one, called "dominant", and a more autonomous profile, called "adaptive". The results reveal positive links between adaptive motivational style, which supports learner autonomy in a positive and structured learning climate, and negative links with inattention and dropout. These findings suggest that the adaptive motivational style in PE involves the learner more autonomously in tasks and can help to create positive learning situations that encourage adherence to practice.

**Keywords:** autonomous motivation, motivational profiles, motor skills, positive learning climate, practice adherence.

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 Two alpinists climbing a  
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## Introduction

Society considers health as a fundamental right and a prime objective (World Health Organisation, 2022). However, current reports warn of the prevalence of a low rate of physical exercise in adolescents, drawing the attention of educators to the increased risk of chronic diseases associated with metabolic syndrome, which will limit the potential for improvement in the quality of life of those affected (Dallmeyer et al., 2020). Several studies point to the importance of generating healthy habits during childhood and adolescence, as these are crucial developmental stages for establishing routines and behaviours throughout adulthood (Jester et al., 2018; Knafel et al., 2023; Taylor et al., 2010).

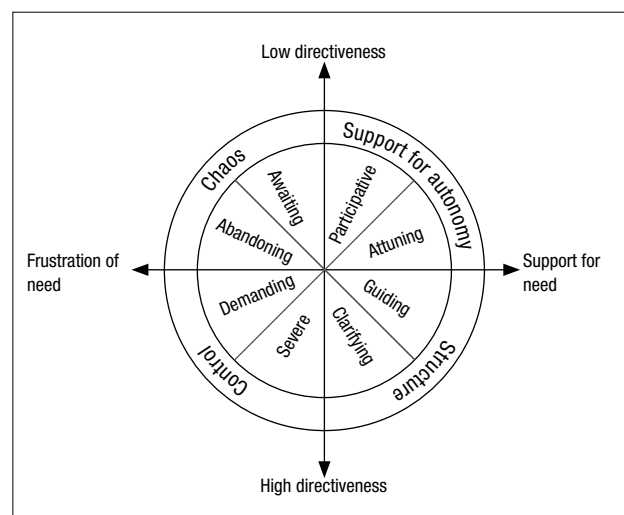
Physical Education (PE), due to its presence in the basic education curriculum (6-16 years), with an appropriate pedagogical approach, can play a decisive role in promoting physical exercise and creating healthy habits, helping to increase levels of practice and adopting an active lifestyle (World Health Organization, 2022). Recent studies confirm that motivation in PE is of utmost importance for increasing the likelihood of remaining active and promoting healthy lifestyles (Bechter et al., 2019), especially when the practice is enjoyable (Fin et al., 2019). It has been shown that the perception of a positive classroom environment stimulates student participation in activities and that this involvement is increased when the teacher adopts a motivational facilitating style (Chacón Cuberos et al., 2018; Reeve et al., 2014), improving the results and quality of learning (Reeve & Shin, 2020) towards a more adaptive and functional direction (Vasconcellos et al., 2020), in line with competence-based learning, in which meaningfulness, autonomy, and reflection are the pillars for the development of key competencies.

Although student motivation depends on multiple factors, interpersonal interaction and the behaviour displayed by the teacher to motivate their students (motivational style) are fundamental in order to foster positive experiences (Diloy-Peña et al., 2021), proactivity, and engagement in practice. Self-Determination Theory (SDT) (Ryan & Deci, 2017, 2020) evidences that student motivation improves when the teacher's motivational style addresses basic psychological needs (BPNs) (competence, autonomy, and relatedness) (Franco et al., 2023; Moreno-Murcia & Huéscar, 2019; Vansteenkiste et al., 2020), uses supportive messages to the student, and is empathetic in class (Zhang, 2022), as it creates a positive learning climate (Reeve & Shin, 2020), in which students are more involved in tasks (Cents-Boonstra et al., 2022), improve their academic performance, and show greater vitality (Santana-Monagas et al., 2022).

Teacher motivational style has been interpreted on a continuum ranging from a controlling approach (CA)

to autonomy support (AS) (Reeve, 2016). The CA is characterised by frustrating BPNs, as a cold or chaotic environment predominates, employing authoritarian language and pressuring the student to act according to their criteria, encouraging their participation with extrinsic incentives (Moreno-Murcia et al., 2018; Vasconcellos et al., 2020). The AS style is identified as meeting the BPNs, as a structured environment prevails, fostering student confidence and security, giving them greater responsibility for decision making. In this regard, Fin et al. (2019) showed that autonomy support in PE resulted in a positive motivational orientation in the learner, generated greater enjoyment, and promoted greater involvement in activities at the situational level. Consequently, according to the Hierarchical Model of Motivation (Vallerand, 1997), to the extent that such experiences are prolonged over time, they can have a stable impact on their personality at the contextual level (school environment), so that it will be easier to adopt an active and healthy lifestyle at the global level (living environment) (Vallerand & Lalande, 2011). In further study of teacher motivational style, Aelterman et al. (2019) proposed a model around a circumplex approach, which presents four major styles (Autonomy Support, Structure, Control, and Chaos) organised in a circular structure, across two dimensions (Figure 1). The vertical axis, which positions the styles according to the degree of directiveness and the horizontal axis, which confronts them according to the frustration or satisfaction of the BPNs.

**Figure 1**  
Representation of the different interpersonal styles in the Circumflex Model (Aelterman et al., 2019).



This approach establishes a total of eight sub-dimensions, associated in pairs (adjacent) to each of the motivational styles, whose relationships are specified in Table 1.

**Table 1**  
Description of the four styles and eight sub-dimensions based on Aelterman et al. (2019).

Style	Definition	Subdimension	Description
Support for autonomy	The teacher seeks to identify and promote the interests, opinions and feelings of the students, so that they can voluntarily become involved in the activities.	Participative	The teacher identifies students' personal interests through dialogue, inviting them to provide ideas and suggestions. In addition, where possible, the teacher tries to offer alternative ways of solving activities so that they can develop at an optimal pace.
		Attuning	The teacher tries to make the exercises more attractive and interesting for the students, trying to understand their perspective.
Structure	Taking into account the students' abilities, the teacher provides help and assistance so that they feel competent to master the skills.	Guiding	The teacher seeks the progress of students, providing help and assistance as and when needed. The teacher provides hints so that students can continue independently and complete the task, questioning the teacher if necessary.
		Clarifying	The teacher communicates their expectations of students in a clear and transparent way and assesses against said expectations.
Control	The teacher imposes their own rules, forcing the student to think and act in a certain way, regardless of what they think.	Severe	The teacher demands discipline through an imposing vocabulary, marks the students' obligations, does not tolerate contradictions and threatens sanctions if they do not comply with the rules.
		Dominant	The teacher exercises some power over the students to make them comply with the rules. They also repress students by making them feel ashamed, guilty and anxious.
Chaos	The teacher leaves the students to act on their own, making the teaching process confusing for them, in which they would not know what to do, how to behave or how to develop their skills.	Abandoning	The teacher lets the students off the hook by allowing them to do whatever they want.
		Awaiting	The teacher provides a motivational climate called <i>laissez-faire</i> where the initiative lies with the students. The teacher tends to wait and see how things unfold, not planning too much and letting things take their course.

The circumflex model proposes to shift the traditional categorisation between motivating and demotivating teachers towards a holistic approach, aimed at better understanding the styles deployed in a classroom situation, in order to more accurately interpret their consequences (Aelterman et al., 2019), establishing two main behavioural patterns, those of an adaptive nature, represented by styles that encourage participation and guide students during their learning, and those that are non-adaptive, represented by dominant, intransigent and chaotic styles, linked to passivity during instruction and student abandonment in the development of the activity (Escriva-Boulley, Haerens, et al., 2021; Burgueño et al., 2023).

The focus on the directiveness and satisfaction binomial of BPNs for the study of teacher motivational style is attracting interest in the literature and several studies have recently appeared in different contexts (Aelterman et al., 2019; Cohen et al., 2022; Delrue et al., 2019; Escriva-Boulley, Haerens, et al., 2021; Gordeva & Sychev, 2021; Franco et al., 2023; Moè et al., 2022; Vermote et al., 2020). However, to date there is little evidence linking the motivational styles of the PE teacher to the degree of student-perceived directiveness and confirming these patterns with student perceptions. Thus, this study had two main objectives. The first was to check whether there was a relationship between styles and substyles or subdimensions. The second was to test whether the theoretical relationship between the styles shown in the literature coincided with the students' perception in terms of directiveness. Based on the findings shown in previous studies, it was expected that there was a positive and significant relationship between AS motivational styles, because they satisfy BPNs, and a negative and significant relationship with Chaos and Control styles, because they frustrate them (Hypothesis 1). Directiveness was also predicted to be positively and significantly affected by the Control style and negatively by the AS style, while a Structure style was predicted to be more related to Directivity (Hypothesis 2). According to the approach, it was anticipated that Chaos would have no relationship with Directiveness, while the Control style would have a close relationship with Directivity (Hypothesis 3). Finally, the investigators expected to obtain a positive and significant relationship between each subdimension with the corresponding teaching styles and their adjacencies, the latter being smaller and even negative as they move along the axes of the model (Aelterman et al., 2019; Delrue et al., 2019; Vermote et al., 2020) (Hypothesis 4).

## Method

### Research design

This study responded to a correlational-causal, cross-sectional design, with a quantitative method of data collection. Thus,

by means of self-reporting, the variables were measured on an *ad hoc* basis and their possible relationships were analysed, without manipulation or a differentiated methodological intervention.

Non-probability sampling was carried out by convenience and was conditional on access to the sample. The established inclusion criteria were: 1) being enrolled in the participating school during the academic year, and 2) currently studying PE as a subject. A total of 38 students were excluded as they fulfilled one of the following exclusion criteria: a) irregular attendance to PE class (< 80% of the sessions); b) failure to complete the questionnaires, and c) failure to sign the informed consent form. This research was approved by the Ethics Committee of the Miguel Hernández University of Elche (DPS.JMM.01.17).

### Participants

The sample consisted of a total of 500 students (291 girls and 207 boys) from various secondary schools in different Spanish provinces, aged between 13 and 17 ( $M = 14.02$ ;  $SD = 1.52$ ). Of the total sample, 153 students belonged to 1st ESO (mandatory secondary education), 127 students to 2nd ESO, 154 students to 3rd ESO and 66 students to 4th ESO. In general, the socio-economic level of the participants was heterogeneous. Some schools were categorised as low or lower-middle class because of families who were unemployed or had limited financial resources, while other schools were medium or upper-middle because the families were employed workers, small-business self-employees, and civil servants.

### Resources

*Situations-in-School (SIS) Questionnaire* (Aelterman et al., 2019). This 60-item questionnaire determines the interpersonal style used by the teacher, looking at how they act in 15 possible scenarios that occur in PE. In turn, four ways of behaving are presented for each of these situations (one for each teaching style: autonomy support, structure, control, and chaos), thus encompassing a total of 60 responses when completing the questionnaire (e.g., "When presenting the rules in class... AS - the teacher invites us students to have a say in the rules, so that they help us feel comfortable in class; ES - the teacher announces his expectations to start cooperating with us; CO - the teacher tells us students that we must follow them all as he says, even warning us that there will be sanctions if we break them; CA - the teacher does not care about the rules or our opinions at all"). Following Muñoz et al. (2013), the translation of the scale into Spanish was carried out by means of a reverse translation of the items of the SIS questionnaire, transcribed first into Spanish and then into

English by an independent translator. It was measured on a Likert-type scale ranging from 1 (does not describe me at all) to 7 (describes me extremely well). In this study, Cronbach's alpha coefficient ranged from  $.82 < \alpha < .88$  and  $.66 < \alpha < .87$  for the four teaching models and the eight sub-dimensions, respectively.

**Directiveness.** The Psychologically Controlling Teaching (PCT) scale (Soenens et al., 2012) was used. This questionnaire measures the degree of Directiveness employed by teachers in PE and consists of seven items (e.g. "The teacher always wants to influence the behaviour or thinking of the students, even before we give our opinion"). The previous sentence was "In our PE classes...". The questionnaire was translated from English into Spanish. It was measured on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). A Cronbach's alpha coefficient of .76 was obtained. Confirmatory factor analysis found that the seven items were grouped into a single dimension. The standardised factor loadings (between .44 and .89) were all statistically significant ( $p < .001$ ), so it can be concluded that the model performed satisfactorily at the analytical level. In addition, the overall results of the model indicated a satisfactory overall fit ( $\chi^2 = 345.123$ ;  $p < .001$ ;  $\chi^2/g.l. = 2.311$ ; CFI = .971; IFI = .978; RMSEA = .041).

## Procedure

Firstly, the schools were contacted through the PE department and the general objective of the study was explained, as well as the procedure to be followed. Data confidentiality was emphasised and permissions were arranged. Once the procedure was detailed and permissions accepted, data collection was carried out by means of questionnaires using Google Docs Questionnaires.

## Analysis of results

First, descriptive statistics were calculated for each of the variables: means and standard deviations, as well as bivariate correlations. Next, in order to obtain certainty about the validity of the questionnaires, an internal consistency analysis of each factor was carried out by calculating Cronbach's alpha coefficient and a confirmatory factor analysis to check the validity of the construct of the scales. In addition, an attempt was made to identify different profiles on the perception of the motivational style of teaching. A hierarchical cluster analysis with Ward's method was performed with sample 1, using all

interpersonal styles from the SIS questionnaire. Then, with the same variables, the investigators tried to confirm the profile solution found, using a K-means cluster analysis with sample 2. In addition, an analysis of variance (ANOVA) was performed. A hierarchical cluster analysis using the Ward method was then carried out on the entire sample. The statistical package SPSS Statistics 25 and AMOS 25 were used for the analysis.

## Results

### Descriptive analysis and bivariate correlation

Table 2 shows that, of the four dimensions of motivational style, it was the Structure style that had the highest mean ( $M = 4.70$ ,  $SD = 1.06$ ), followed by the AS style ( $M = 4.15$ ,  $SD = 1.15$ ) and the Control style ( $M = 3.89$ ,  $SD = 0.97$ ), while the lowest mean was for the Chaos style ( $M = 2.98$ ,  $SD = 0.99$ ). Regarding the pairwise sub-dimensions, the highest mean was for the Clarifying subdimension ( $M = 4.72$ ,  $SD = 1.05$ ), followed by Guiding ( $M = 4.67$ ,  $SD = 1.21$ ) and Attuning ( $M = 4.46$ ,  $SD = 1.25$ ), while the lowest was for the Awaiting subdimension ( $M = 2.71$ ,  $SD = 1.17$ ) followed by Abandoning ( $M = 3.12$ ,  $SD = 1.07$ ). The dimensions of the scale correlated positively and significantly with each other, except for Chaos, which correlated negatively with AS and Structure. Control was not correlated with any dimension. A positive and significant relationship was found between the AS dimension and the Structure dimension ( $r = .817$ ;  $p < .01$ ), whereas with the Chaos dimension it was negative and significant ( $r = -.173$ ;  $p < .01$ ). The Chaos dimension was positively and significantly related to the Control dimension ( $r = .527$ ;  $p < .01$ ). The Structure dimension was negatively and significantly related to Chaos ( $r = -.302$ ;  $p < .01$ ).

Regarding the relationship between the different motivational styles and their corresponding subdimensions, it was observed that the AS and Structure dimensions were positively and significantly related to the Participative, Attuning, Guiding, and Clarifying subdimensions. At the same time, the Structure style was negatively and significantly related to the Directiveness subdimension. In the case of the Control and Chaos dimensions, a positive and significant relationship was observed with the subdimensions Domineering, Demanding, Abandoning, Awaiting, and Directiveness (Table 2).

**Table 2**  
Descriptive analysis and bivariate correlations.

	M	SD	$\alpha$	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Dimensions</b>																
01. Support for autonomy	4.15	1.15	.888	–												
02. Structure	4.70	1.06	.878	.817**	–											
03. Control	3.89	0.97	.825	.027	.068	–										
04. Chaos	2.98	0.99	.838	-.173**	-.302**	.527**	–									
<b>Sub-dimensions</b>																
05. Participative	3.54	1.24	.665	.847**	.621**	.125**	.070	–								
06. Attuning	4.46	1.25	.875	.965**	.823**	-.025	-.274**	.677**	–							
07. Guiding	4.67	1.21	.840	.820**	.952**	-.003	-.318**	.610**	.834**	–						
08. Clarifying	4.72	1.05	.713	.691**	.915**	.151**	-.237**	.544**	.687**	.748**	–					
09. Severe	4.03	1.08	.727	.016	.102*	.929**	.404**	.105*	-.030	.029	.184**	–				
10. Demanding	3.74	1.05	.688	.036	.015	.900**	.573**	.126**	-.013	-.039	.084	.674**	–			
11. Abandoning	3.12	1.07	.793	-.198**	-.297**	.552**	.948**	.033	-.291**	-.332**	-.207**	.423**	.602**	–		
12. Awaiting	2.71	1.17	.684	-.077	-.225**	.330**	.811**	.118**	-.165**	-.201**	-.223**	.254**	.358**	.581**	–	
13. Directiveness	2.30	0.89	.758	-.204**	-.455**	.429**	.489**	-.170*	-.201**	-.404**	-.457**	.298**	.487**	.482**	.347**	–

Note: M = Mean; SD = Standard Deviation; \*p <.05; \*\*p <.01.

**Table 3***Means and standard deviations of the variables in each cluster for samples 1, 2 and total.*

	Sample 1				Sample 2				Total sample			
	Cluster 1 (n = 169)		Cluster 2 (n = 81)		Cluster 1 (n = 175)		Cluster 2 (n = 75)		Cluster 1 (n = 344)		Cluster 2 (n = 156)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
<b>Dimensions</b>												
Support for autonomy	3.56	1.04	4.90	0.69	3.53	0.92	5.10	0.80	3.55	0.99	5.00	0.75
Structure	4.42	0.82	5.78	0.49	4.02	0.87	5.73	0.57	4.22	0.87	5.76	0.53
Control	4.11	1.02	3.51	1.01	3.91	0.89	3.67	0.85	4.01	0.96	3.59	0.94
Chaos	3.28	0.98	2.20	0.54	3.21	0.91	2.14	0.66	3.25	0.95	2.17	0.60
<b>Sub-dimensions</b>												
Participative	3.19	1.28	4.18	0.96	3.15	1.04	4.51	0.99	3.17	1.17	4.34	0.98
Attuning	3.92	1.02	5.62	0.71	3.91	1.05	5.68	0.78	3.92	1.04	5.65	0.74
Guiding	4.29	1.02	5.88	0.63	3.97	0.93	5.86	0.67	4.13	0.99	5.87	0.65
Clarifying	4.55	0.85	5.96	0.54	4.07	0.97	5.60	0.60	4.31	0.95	5.65	0.57
Severe	4.22	1.11	3.71	1.20	4.03	0.99	3.93	1.01	4.12	1.05	3.81	1.12
Demanding	4.00	1.10	3.31	1.04	3.80	0.96	3.42	0.89	3.91	1.04	3.36	0.97
Abandoning	3.50	1.06	2.36	0.64	3.45	0.93	2.28	0.83	3.48	1.00	2.32	0.74
Awaiting	3.06	1.21	2.03	0.79	2.98	1.13	2.00	0.79	3.02	1.18	2.02	0.79

Note: M = Mean; SD = Standard Deviation.

### Cluster analysis

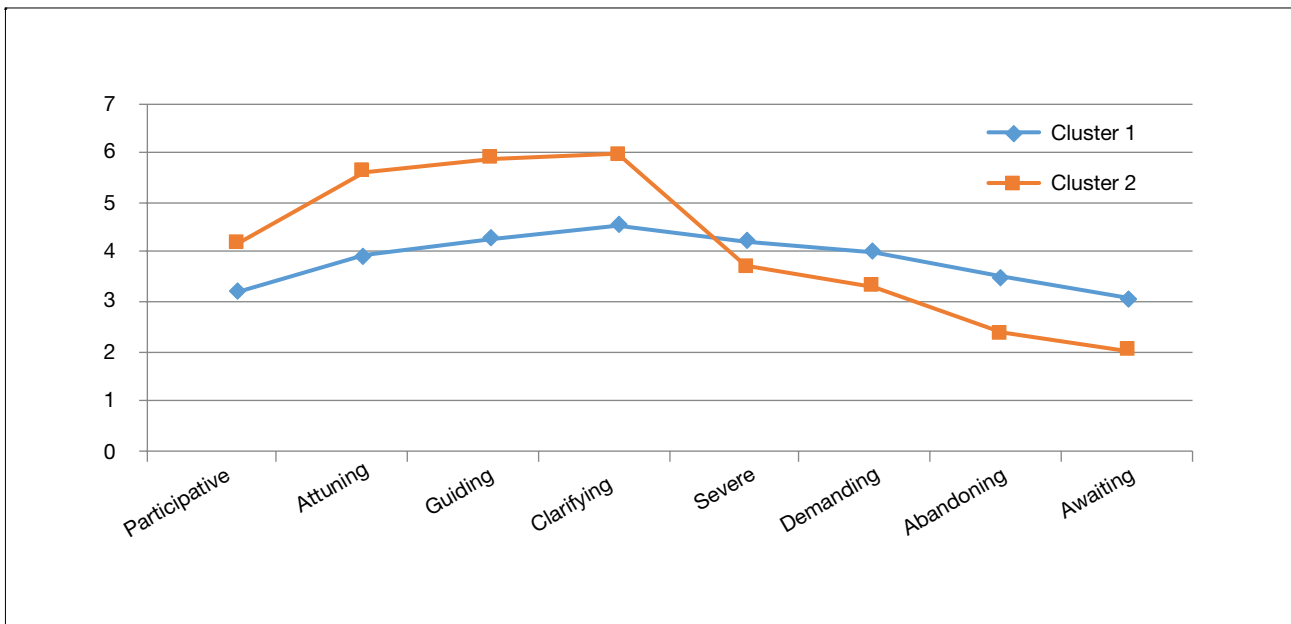
For the cluster analysis, the phases proposed by Hair et al. (1998) were followed. First, the total sample of 500 students was randomly divided into sample 1 ( $n = 250$ ; 107 males and 140 females;  $M = 1.33$ ;  $SD = 0.469$ ) and sample 2 ( $n = 250$ ; 99 males and 151 females;  $M = 1.30$ ;  $SD = 0.459$ ). Second, the univariate distribution of all pooled variables was examined for normality.

To determine the group profiles on the perception of teacher motivational style in sample 1, a hierarchical cluster analysis was performed using the Ward method. The obtained dendrogram suggested the existence of two groups (Table 3; Figure 2).

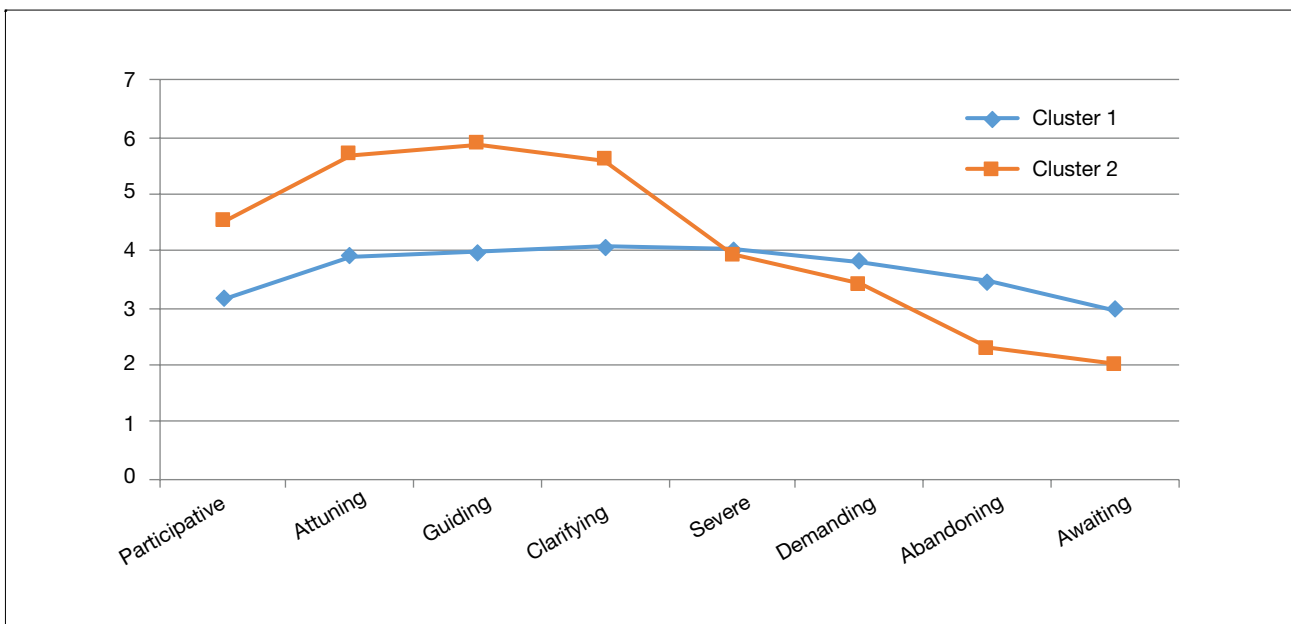
In order to confirm the adequacy of the groups that emerged, it was decided to take the increase in the

agglomeration coefficients as a reference. According to Norusis (1992), small coefficients indicate high homogeneity among cluster members while, on the contrary, large coefficients show differences among cluster members. Two distinct profiles appeared (Figure 2): a dominant profile (cluster 1), with mean scores on the perception of the teacher's motivational style (between 3 and 4.55) in all sub-dimensions; and an adaptive profile (cluster 2), with high scores in the sub-dimensions belonging to the AS and Structure styles (4.90 and 5.78, respectively), and medium scores in the subdimensions Domineering and Demanding (3.71 and 3.31, respectively), characteristic of the Control style, and low scores in the subdimensions Abandoning and Awaiting (2.36 and 2.03, respectively), characteristic of the Chaos style.

**Figure 2**  
Hierarchical cluster analysis with Ward method in sample 1.



**Figure 3**  
Cluster analysis of K-means in sample 2.

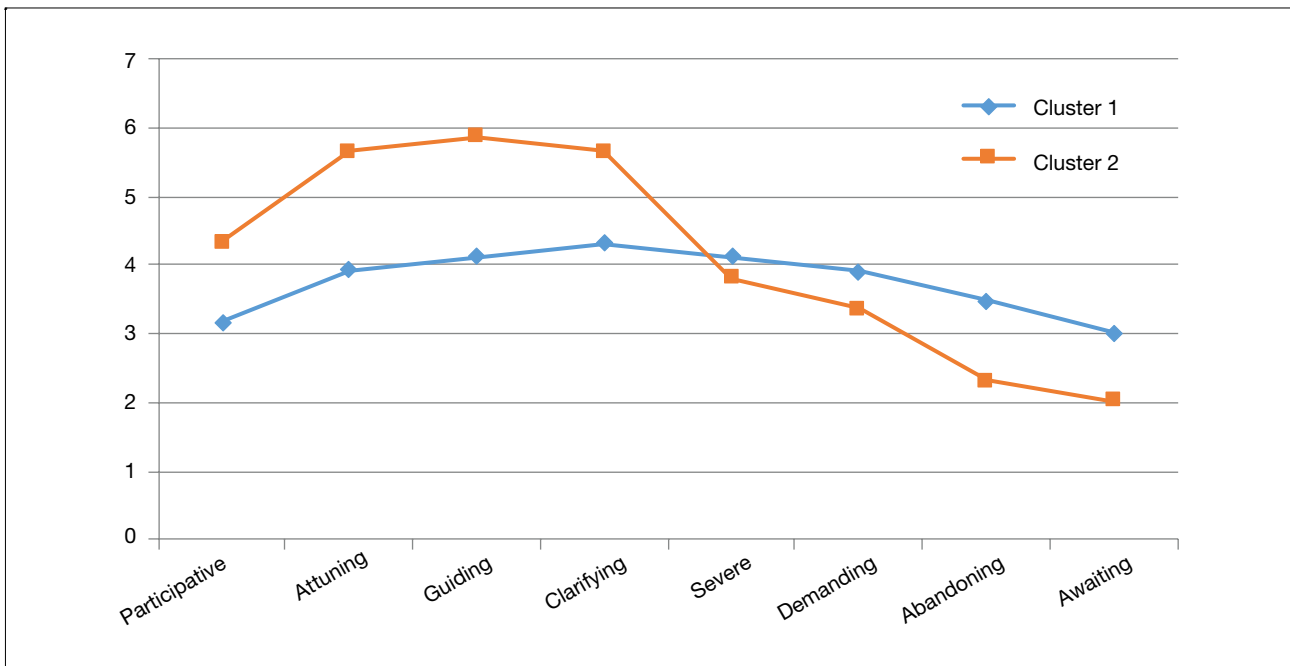


To determine the group profiles in sample 2, the k-means test was used, also determining two profiles on the perception of teacher motivational style (Table 3; Figure 3): a dominant profile (cluster 1), with average scores on the perception of teacher motivational style in all sub-dimensions (between 3.15 and 4.07); and an adaptive profile (cluster 2), with high scores on the perception of teacher motivational style

in the sub-dimensions: Participative, Attuning, Guiding, and Clarifying (4.51, 5.68, 5.86 and 5.60, respectively), belonging to the AS and Structure styles, medium scores in the subdimensions Domineering and Demanding (3.93 and 3.42), belonging to Control, and low scores in the Abandoning and Awaiting subdimensions (2.28 and 2.00), included in the interpersonal style Chaos.



**Figure 4**  
Hierarchical cluster analysis with Ward method on the total sample.



Next, a hierarchical cluster analysis using the Ward method was carried out with the whole sample, again obtaining two profiles (Table 3; Figure 4): a dominant profile (cluster 1) with mean scores on the perception of the teacher motivational style in all subdimensions (between 3.02 and 4.31); and an adaptive profile (cluster 2), with high scores on the subdimensions belonging to the AS and Structure interpersonal styles (5.00 and 5.76), and medium scores on the subdimensions Domineering and Demanding (3.81 and 3.36), belonging to the Control style, and low scores on the Abandoning and Awaiting subdimensions (2.32 and 2.02), belonging to the interpersonal style Chaos.

**Multivariate analysis**

To examine the characteristics of each profile in relation to Directiveness, an analysis of variance was performed on the total sample. For this purpose, clusters were used as the independent variable and Directiveness as the dependent variable. The results obtained showed differences (Wilk’s  $\Lambda = .80, F = 21.16, p < .001$ ) in favour of the dominant profile 1 ( $M = 2.63; SD = 0.95$ ) versus the adaptive profile ( $M = 1.83; SD = 0.51$ ), as shown by the data ( $F(1,500) = 42.30, p < .001, \eta^2 = .19$ ).

**Discussion**

First, investigators hypothesised (H1) a positive and significant relationship between the motivational styles of AS and Structure, and a negative and significant relationship

with the styles of Chaos and Control. AS and Structure style correlated highly, positively and significantly but only negatively with Chaos style (Control style did not correlate with either AS or Structured). H1 can therefore only be accepted in part.

Secondly, Directiveness was expected to be negatively predicted by the AS style and positively predicted by the Control style. Cluster analysis revealed the existence of two profiles of perceptions of teacher motivational style and Directiveness. On the one hand, a dominant profile, which showed consistent average scores on all sub-dimensions and was positively associated with Teacher Directiveness; and an adaptive profile, which showed high scores on the sub-dimensions pertaining to the motivational styles of AS and Structure. Medium scores were also observed in the sub-dimensions Domineering and Demanding, typical of the Control style, and low scores in the Abandoning and Awaiting subdimensions, typical of the Chaos style. Therefore, the study confirmed that students who experience teacher interaction from an adaptive profile and show high scores on the interpersonal style of AS perceived less Directiveness during lessons. Previous studies partly concur with these findings, as most of the controlling or structuring teaching strategies were at the high end of Directiveness, while AS and chaos strategies were at the low end (Escrivá-Boulley, Guillet-Descas, et al., 2021). On the other hand, the results obtained show two well-differentiated profiles coinciding with the theoretical model on the vertical axis, where Directiveness has a negative relationship with AS and a positive relationship with Control. However, a negative

relationship with Structure and a positive relationship with Chaos is envisaged, so that the assumptions postulated by the model are not fully met. This may be due to the fact that students who perceive greater structuring in the sessions do not relate it to Directiveness, but rather it is perceived as an aid or facilitator to learning. They may also relate Chaos to Directivity due to some PE teachers not structuring their classes well, not giving AS to their learners, but improvising and perceived as Chaos where Directiveness and malpractice are used to regain classroom management (Haerens et al., 2016; Reeve, 2016). As in previous studies (Chacón Cubero et al., 2018), a high relationship was found between styles that tend towards BPN satisfaction and their adjacencies and a low relationship with those that tend towards frustration of BPNs, while a high relationship of each style with its adjacencies was also found. However, it was expected that the interpersonal style “Structure” would be positively related to Directiveness and this was not the case, leading to the partial rejection of H2.

Thirdly, a positive and significant relationship was expected between each subdimension and its corresponding teaching style, as well as with its adjacencies, the latter being smaller and even negative as the styles move along the axes of the model. The results showed that the AS style correlated most strongly with the Participative and Attuning subdimensions, the Structure style with Guiding and Clarifying, the Control style with Domineering and Demanding, and the Chaos style with Abandoning and Awaiting. Similarly, the relationship between the subdimensions and their adjacencies, as they moved along the axes (e.g., Participative-Awaiting or Clarifying-Domineering), was also true. However, although the relationship between the adjacent styles was intuited, as they are characterised by the same degree of Directiveness, low or high (AS-Chaos and Control-Structure), or by tending to satisfy or frustrate BPNs (AS-Structure and Chaos-Control) in the same intensity, the results were not so clear. This may be due to how the styles are perceived among students. That is, a learner might perceive that one style is both participative and dominant; or that, even if they are totally opposite styles, they share some characteristics that make them related, since at a theoretical level they interact throughout the model. This different perception could be mediated by other aspects that influence motivation towards PE (Taylor et al., 2010) such as gender, age and motor skills, preferences and perceived competence. Previous studies have shown that female students tend to have lower motivation in PE or different perceptions of motivational climate (Pérez-González et al., 2019), which could be related to differences in physical

activity and sport preferences, as well as perceptions of competence (Corr et al., 2019; Smith et al., 2015). It has been found that younger students tend to be more motivated in PE classes than older students, which could be related to changes in the perception of the importance of physical activity and interest in other extracurricular activities, and that the higher the level of motor skills, the higher the motivation in PE classes, as they perceive greater competence in the proposed activities. Therefore, PE teachers should design activities that allow all students to experience success and develop their skills, regardless of their initial level of competence, thus accepting H3.

Fourthly and finally, an interpersonal AS style was expected to be less related to Directiveness, while a Structure style was expected to be more related to Directivity. Thus, it was anticipated that Chaos would have no relationship with Directiveness, while the Control style would have a close relationship. The results showed that the AS style correlated low and negatively with Directiveness, but to a lesser extent than the Structure style. Chaos was related to Directiveness to a greater extent than the Control style, which was also positively and significantly related to Directiveness. H4 was therefore rejected.

## Conclusion

The present study has shown the relationship between the different motivational styles employed by PE teachers and the Directiveness perceived by students. Within the axis structure proposed by the circumflex model, there is a positive relationship between the styles closest to each other and between these and their sub-styles. In addition, according to the student’s perception, two motivational profiles are obtained. The so-called adaptive one, far from the rigid and authoritarian behavioural pattern, and the dominant one, closer to it. Therefore, this work represents a starting point in the use of predictive scales on (de)motivational styles in the context of PE in Spain. The results provide information for a better understanding of the nature of factors related to quality motivation and support for BPNs in the PE classroom, allowing for a more accurate and effective readjustment of the teaching intervention. The findings of the study may help teachers to apply a positive motivational style more effectively and to understand more rigorously the effects that the use of a certain style can have on student motivation, so that they can gradually transform their intervention towards an adaptive and self-regulated behavioural pattern. At a practical level, the results allow us to link the use of specific strategies (Huéscar et al., 2022; Moreno-Murcia & Barrachina, 2023) to the development of a

quality motivational climate in the classroom (e.g. involving students in the design of tasks makes them more attractive and stimulating, giving them a degree of responsibility increases their involvement in learning, taking into account students' opinions and interests promotes greater engagement and stimulates social affiliation, setting tasks with different levels of difficulty fosters the perception of effectiveness and generates a greater intention to be physically active and thus encourages attitudes towards adherence to practice, explaining the objectives and usefulness of tasks gives functionality and meaningfulness to learning, and monitoring students' progress by giving them feedback ensures deep learning by helping them to reflect on their progress and better understand their actions. Consequently, applying the strategies of the adaptive profile will minimise the use and effects of the dominant controlling profile (imposing, closed, threatening and not empathising with the students' interests) and chaotic profile (disorganised, improvising, with imprecise, contradictory or decontextualised instructions, and teaching intervention will serve to reduce passivity and situational apathy (in class), by offering positive experiences associated with physical activity, which can reverse the premature abandonment of physical activity at a global level.

With this purpose on the part of teachers, on the one hand, it is expected that the interests of PE students will be identified in order to propose more attractive tasks and thus encourage participation, since taking into account the opinions of students leads to greater commitment (Cheon et al., 2012) and even the intention to be physically active (Moreno-Murcia & Sánchez-Latorre, 2016) as a fundamental objective of PE. On the other hand, the Structure style does not have to be related to Directiveness, so the teacher will seek to develop the task by providing help (when necessary) and will inform them of the objectives expected of them in the task, class or course. In order to avoid control or chaos styles on the part of the PE teacher, one should avoid imposing one's own incomprehensible rules on students, using arrogant or threatening vocabulary, avoiding an authoritarian and dominant climate (without tolerating contradictions and repressing students) and, finally, avoiding passive and idle attitudes that show the teacher's lack of interest in his/her profession and responsibility.

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